

FOLDED FIN MICROCHANNEL HEAT EXCHANGER

Abstract

Folded fin microchannel heat exchangers for cooling integrated circuit (IC) dies and packages and cooling systems employing the same are disclosed. The heat exchangers include a folded fin enclosed within the heat exchanger thereby defining a plurality of microchannels. In one embodiment, a folded fin microchannel heat exchanger is operatively coupled to an IC die or IC package using fasteners and is thermally coupled to the IC die or an IC package using a thermal interface material.

10 In other embodiments, a folded fin microchannel heat exchanger is operatively and thermally coupled to an IC die or an IC package using a thermal epoxy or a solderable material. The folded fin microchannel heat exchangers may be employed in a closed loop cooling system includes a pump and a heat rejecter. The folded fin microchannels are configured to support either a two-phase or a single-phase heat

15 transfer process using a working fluid such as water.